

What Is Claimed Is:

1. A solution temperature control device in a cell observation chamber adapted to be used in an apparatus for detecting cell chemotaxis and for isolating chemotactic cells, said chamber comprising:

a dish-shaped bottom support body with a window for observing the movement of cells provided in the center of the bottom part thereof;

a glass substrate adapted to be placed on the bottom surface of said bottom support body;

a dish-shaped intermediate support body with an opening portion formed in the center of the bottom part thereof, said intermediate support body being adapted to be attached to said bottom support body to press and fix said glass substrate from above onto the bottom surface of said bottom support body;

a substrate with a plurality of through holes for guiding cell suspension and chemotactic factor containing solution therethrough formed therein in a vertically penetrating manner, said substrate being adapted to be fixed onto the surface in the central part of said glass substrate, in which a concavo-convex shape is formed in the surface facing said glass substrate to form at least a pair of wells and a flow path for communicating of said wells with said glass substrate;

a packing member with a plurality of through holes for guiding said cell suspension and said chemotactic factor containing solution therethrough formed therein in a vertically penetrating manner, said packing member being adapted to be fitted into said opening portion that is formed in the center of the bottom part of said intermediate support body to press said substrate from above;

a dish-shaped cover block body with a plurality of through holes for guiding said cell suspension and said chemotactic factor containing solution therethrough formed in the center of the bottom part thereof in a vertically

penetrating manner, said cover block body being adapted to be attached to said bottom support body with said intermediate support body attached thereto to press and fix said substrate from above onto said glass substrate through said packing member; and

    said solution temperature control device for controlling said solutions filling said pair of wells and said flow path to be a predetermined temperature, wherein

    one of said pair of wells is adapted to be provided or given with ~~said~~ cell suspension through each one of said plurality of through holes that are formed, respectively, in said cover block body, said packing member, and said substrate, while the other of said wells is adapted to be provided or given with said chemotactic factor containing solution through each one of said plurality of through holes that are formed, respectively, in said cover block body, said packing member, and said substrate, so that a state where cells move from one to the other of said wells through said flow path can be observed and the number of said cells can be measured through said window provided in said bottom support body while keeping said solutions or the mixture containing said solutions at a predetermined temperature, and wherein

    said solution temperature control device comprises:

        a first temperature controller for measuring the temperature of said solutions filling said pair of wells and said flow path and for controlling said solutions to be a predetermined temperature; and

        a second temperature controller for measuring the temperature of a heating section that heats said cell observation chamber from outside, thereby indirectly heats said solutions filling said pair of wells and said flow path, and for controlling said heating section to be a predetermined preheating temperature.

2. The solution temperature control device in the cell observation chamber according to claim 1, wherein

said first temperature controller comprises a temperature sensor for measuring the temperature of said solutions filling said pair of wells and said flow path,

said temperature sensor being attached detachably to said cell observation chamber, and the temperature sensing part thereof being immersed in solution in a liquid storage chamber formed in said cell observation chamber, and

said liquid storage chamber is provided in an isolated position where said solution therein can receive the indirect heating by said heating section equally with said solutions filling said pair of wells and said flow path.

3. The solution temperature control device in the cell observation chamber according to claim 1, wherein said second temperature controller has a function of preventing said heating section from being overheated.

4. A solution temperature control device in a cell observation chamber adapted to be used in an apparatus for detecting cell chemotaxis and for isolating chemotactic cells, said chamber comprising:

a dish-shaped bottom support body with a window for observing the movement of cells provided in the center of the bottom part thereof;

a glass substrate adapted to be placed on the bottom surface of said bottom support body;

a dish-shaped intermediate support body with an opening portion formed in the center of the bottom part thereof, said intermediate support body being adapted to be attached to said bottom support body to press and fix said glass substrate from above onto the bottom surface of said bottom support body;

a substrate with a plurality of through holes for guiding cell suspension and chemotactic factor containing solution therethrough formed therein in a vertically penetrating manner, said substrate being adapted to be fixed onto the surface in the central part of said glass substrate, in which a concavo-convex shape is formed in the surface facing said glass substrate to form at least a pair of wells and a flow path for communicating of said wells with said glass substrate;

a packing member with a plurality of through holes for guiding said cell suspension and said chemotactic factor containing solution therethrough formed therein in a vertically penetrating manner, said packing member being adapted to be fitted into said opening portion that is formed in the center of the bottom part of said intermediate support body to press said substrate from above;

a dish-shaped cover block body with a plurality of through holes for guiding said cell suspension and said chemotactic factor containing solution therethrough formed in the center of the bottom part thereof in a vertically penetrating manner, said cover block body being adapted to be attached to said bottom support body with said intermediate support body attached thereto to press and fix said substrate from above onto said glass substrate through said packing member; and

said solution temperature control device for controlling said solutions filling said pair of wells and said flow path to be a predetermined temperature, wherein

one of said pair of wells is adapted to be provided or given with said cell suspension through each one of said plurality of through holes that are formed, respectively, in said cover block body, said packing member, and said substrate, while the other of said wells is adapted to be provided or given with said chemotactic factor containing solution through each one of said plurality of through holes that are formed, respectively, in said cover block

body, said packing member, and said substrate, so that a state where cells move from one to the other of said wells through said flow path can be observed and the number of said cells can be measured through said window provided in said bottom support body while keeping said solutions or the mixture containing said solutions at a predetermined temperature, and wherein

said solution temperature control device comprises a temperature sensor for measuring the temperature of said solutions filling said pair of wells and said flow path,

said temperature sensor being attached detachably to said cell observation chamber, and the temperature sensing part thereof being immersed in solution in a liquid storage chamber formed in said cell observation chamber, and

said liquid storage chamber is provided in an isolated position where said solution therein can receive the indirect heating by said heating section equally with said solutions filling said pair of wells and said flow path.